

Claims

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1 1. Safety device usable with a vial, said vial having mounted to one of
2 its ends a hub from which a needle extends, said safety device comprising:
3 a collar slidably matable about said vial;
4 a neck member extending from said collar;
5 a housing pivotably connected to the end of said neck member away
6 from said collar; and
7 a latch member extending from said neck member in a direction
8 towards the center of said collar, said latch member coacting with said hub
9 to prevent said collar from being removed from said vial once said collar
10 has been mated about said vial and moved to be substantially adjacent
11 said hub.

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1 2. Safety device of claim 1, wherein said latch member is integrated to
2 said neck member; and
3 wherein said neck member is flexible with respect to said collar so
4 that said latch member is guided along the side of said hub as said collar
5 is moved towards said hub, said latch member latching onto a shoulder of
6 said hub when said collar is moved adjacent to said hub.

1 3. Safety device of claim 1, wherein said latch member is integrated to
2 a location along said neck member so as to effect a space between said
3 latch member and said collar along said neck member whereinto said hub
4 matingly fits after said collar is moved adjacent to said hub and said latch
5 member is moved into position to latch onto a shoulder of said hub.

1 4. Safety device of claim 1, wherein said neck member is flexible with
2 respect to said collar so that once said collar is moved to a given position
3 relative to said hub, said neck member flexes to a position to enable said
4 latch member to latch onto a shoulder of said hub; and

5 wherein said housing comprises a slot wherethrough said needle
6 passes when said housing is pivoted to a position in substantial alignment
7 with the longitudinal axis of said vial, said housing further including at least
8 one locking means for fixedly maintaining said needle relative to said
9 housing once said housing is pivoted to said alignment position;

10 wherein once fixed relative to each other, said needle and said
11 housing interact to prevent said neck member from flexing away from said
12 hub and said latch member from being disengaged from said shoulder of
13 said hub.

1 5. Safety device of claim 4, wherein said locking means comprises a
2 hook integrated to the interior of said housing for holding said needle fixed
3 relative to said housing once said housing is pivoted to said alignment
4 position and said needle biases and then is held by said hook.

1 6. Safety device of claim 1, wherein said neck member comprises a
2 flexible upright extending from said collar, and wherein said latch member
3 comprises a lip extending at its tip, said lip latching onto a shoulder of said
4 hub when said collar is moved adjacent to said hub.

1 7. Safety device usable with a vial, said vial having mounted to one of
2 its ends a hub from which a needle extends, said safety device comprising:
3 a collar slidably matable about said vial;

4 a support member extending from said collar;
5 a housing pivotably connected to the end of said support member
6 away from said collar; and

7 a latch member extending from said collar in planar relationship with
8 said support member, said latch member being flexible relative to said
9 support member so as to coact with said hub to prevent said collar from
10 being removed from said vial once said collar has been mated about said
11 vial and moved substantially adjacent to said hub.

1 8. Safety device of claim 7, wherein said support member comprises
2 a frame extending from said collar and wherein said latch member extends
3 from said collar to fit within the confines of said support frame, said latch
4 member being guided along said hub as said collar is moved towards said
5 hub and latches onto a shoulder of said hub when said collar is moved
6 adjacent to said hub.

1 9. Safety device of claim 7, wherein said support member is a rigid
2 member and said latch member comprises a flexible upright extending
3 from said collar and a lip extending at its tip, said lip latching onto a
4 shoulder of said hub when said collar is moved adjacent to said hub.

1 10. Safety device of claim 7, wherein said latch member is flexible with
2 respect to said collar so that once said collar is moved to a given position
3 relative to said hub, said latch member latches onto a shoulder of said hub;
4 and

5 wherein said housing comprises a slot wherethrough said needle
6 passes when said housing is pivoted to a position in substantial alignment

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7 with the longitudinal axis of said vial, said housing further including at least
8 one locking means for fixedly maintaining said needle relative to said
9 housing once said housing is pivoted to said alignment position;

10 wherein once fixed relative to each other, said needle and said
11 housing interact to prevent said latch member from flexing away and
12 disengaged from said hub.

B. 1 11. Safety device of claim 10, wherein said locking means comprises a
2 hook integrated to the interior of said housing for holding said needle fixed
3 relative to said housing once said housing is pivoted to said alignment
4 position and said needle biases and then is held by said hook.

1 12. Safety device of claim 7, wherein said vial further comprises a
2 gasket slidable along the length of said vial, said vial with said collar
3 positioned adjacent said hub being placed into a cavity of a holder, said
4 gasket being coupled to a plunger slidable along the length of said holder;

5 wherein fluid stored in said vial is ejected out of said vial through
6 said needle when said plunger is pushed towards said hub.

1 13. In combination,
2 a collar slidably matable about a vial having a hub from which a
3 needle extends;

4 a neck member extending from said collar;

5 a housing pivotably connected to the end of said neck member away
6 from said collar,

7 a latch member positioned relative to said neck member coacting
8 with said hub to prevent said collar from being removed from said vial once

11 a holder having a cavity into which said vial having said collar
12 mounted thereabout is fitted.

1 14. Combination of claim 13, wherein said latch member integrally
2 extends from said neck member in a direction towards the center of said
3 collar, said neck member being flexible with respect to said collar so that
4 said latch member is guided along the side of said hub as said collar is
5 moved towards said hub, said latch member latching onto a shoulder of
6 said hub when said collar is moved adjacent said hub.

1 15. Combination of claim 13, wherein said latch member is integrated
2 to a location along said neck member so as to effect a space between said
3 latch member and said collar along said neck member whereinto said hub
4 matingly fits after said collar is moved adjacent said hub and said latch
5 member is moved into position to latch onto a shoulder of said hub.

1 16. Combination of claim 13, wherein said neck member comprises a
2 rigid support frame extending from said collar; and

3 wherein said latch member extends from said collar to fit within the
4 confines of said support frame, said latch member being guided along said
5 hub as said collar is moved towards said hub and latches onto a shoulder
6 of said hub when said collar is moved adjacent to said hub.

1 17. Combination of claim 13, wherein said neck member is flexible with
2 respect to said collar so that once said collar is moved to a given position

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3 relative to said hub, said neck member flexes to a position to enable said
4 latch member to latch onto a shoulder of said hub; and

5 wherein said housing comprises a slot wherethrough said needle
6 passes when said housing is pivoted to a position in substantial alignment
7 with the longitudinal axis of said vial, said housing further including at least
8 one locking means for fixedly maintaining said needle relative to said
9 housing once said housing is pivoted to said alignment position;

10 wherein once fixed relative to each other, said needle and said
11 housing interact to prevent said neck member from flexing away from said
12 hub and said latch member from being disengaged from said shoulder of
13 said hub.

1 18. Combination of claim 13, further comprising:

2 a gasket slidable along the length of said vial;

3 a plunger slidable along the length of said holder;

4 wherein said gasket is coupled to said plunger when said vial with
5 said collar positioned adjacent said hub is fitted into said cavity of said
6 holder so as to eject fluid stored in said vial through said needle when said
7 plunger is pushed towards said hub.

1 19. Combination of claim 13, wherein said holder further comprises a
2 turnable base member that, when rotated in one direction, would come into
3 contact with the end of said vial away from said hub to thereby apply a
4 biasing force against said vial to forcibly maintain said vial inside said
5 cavity of said holder and said collar secured to said vial.

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- 1 20. A method of attaching a needle protection housing to a vial, a hub
2 formed at one end of said vial and a needle extending from said hub,
3 comprising the steps of:
4 attaching said housing to a collar via a neck member;
5 extending from said neck member a latch member in a direction
6 towards the center of said collar;
7 fitting said collar about said vial; and
8 moving said collar relative to said hub until said latch member
9 latches onto a given portion of said hub to prevent said collar from moving
10 away from said hub.
- 1 21. Method of claim 20, further comprising the steps of:
2 placing said vial fitted with said collar into a holder;
3 actuating a mechanism integral of said holder to apply a biasing
4 force to said vial to securely retain said vial within said holder.

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